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A NEW GENUS AND SPECIES OF SCALEWORM (POLYCHAETA: POLYNOIDAE) FROM THE CASCADE PLATEAU, TASMAN SEA.

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ABSTRACT

A new genus and species *Brychionoe karenae* from the Cascade Plateau, Tasman Sea, is described and illustrated. The species is commensal on an antipatharian, *Leiopathes* n. sp. and was collected from 1100 metres.

KEYWORDS: Polychaeta, Polynoidae, new genus, new species, commensal, Cascade Plateau, Tasman Sea.

INTRODUCTION

The South Australian Museum recently sent the authors a large collection of polynoid scaleworms from southern Australian waters. Some of the material was collected from deepwater (800-1100m) and included a number of specimens which were found in association with a new species of antipatharian (*Leiopathes* sp.) from 1100m. Examination of these scaleworms revealed several morphological features which readily distinguish them from the existing genera and species of the Polynoidae, and consequently a new genus and species is required.

The type material is deposited in the South Australian Museum, Adelaide (SAM); the Northern Territory Museum of Arts and Sciences, Darwin (NTM); the Australian Museum, Sydney (AM); the British Museum (Natural History), London (BMNH); and the National Museum of Natural History, Smithsonian Institution, Washington (USNM).

SYSTEMATICS

Family Polynoidae Malmgren
Subfamily Harmothoinae

Brychionoe gen.nov.

Type species. *Brychionoe karenae* sp.nov.
Gender. feminine.
Diagnosis. Body elongate, slender, cylindrical, fragile, with numerous segments. Elytra numerous pairs, on prominent elytrophores, on segments 2,4,5,7,9, alternate segments to 23,26,29,32,33,35, thereafter on every segment. Elytra large, thick, soft, with papillae and microtubercles. Dorsal cirri on segments without elytra; cirrophores large, cylindrical, styles papillated, cylindrical basally, gently tapering distally; dorsal tubercles absent. Prostomium bilobed, wider than long, with rounded lobes, with indistinct cephalic peaks, with two palps and three antennae. Median antenna with ceratophore large, truncate, inserted in anterior notch; ceratophores of lateral antennae short, cylindrical, inserted ventrally. Eyes, two pairs, poorly defined, anterior pair lying dorsolaterally at widest part of prostomium, posterior pair lying near rear edge. First or tentacular segment not visible dorsally, tentaculophores lateral to prostomium, ase-tigerous, with two pairs of papillated tentacular cirri; without facial tubercle. Second segment without nuchal fold, with first pair of elytra on prominent elytrophores, and long buccal cirri. Parapodia biramous, notopodium bluntly digitiform, with acicular process and terminal papillae; neuropodium with longer bluntly pointed presetal lobe and shorter postsetal lobe; distally both lobes with numerous terminal papillae. Ventral cirri large, stout, with numerous papillae. Notosetae long, broad, slightly flattened, smooth with blunt tips. Neurosetae long, slender, with subdistal swelling and spinous regions below hooked entire or bifid tips. Nephridial papillae inconspicuous.

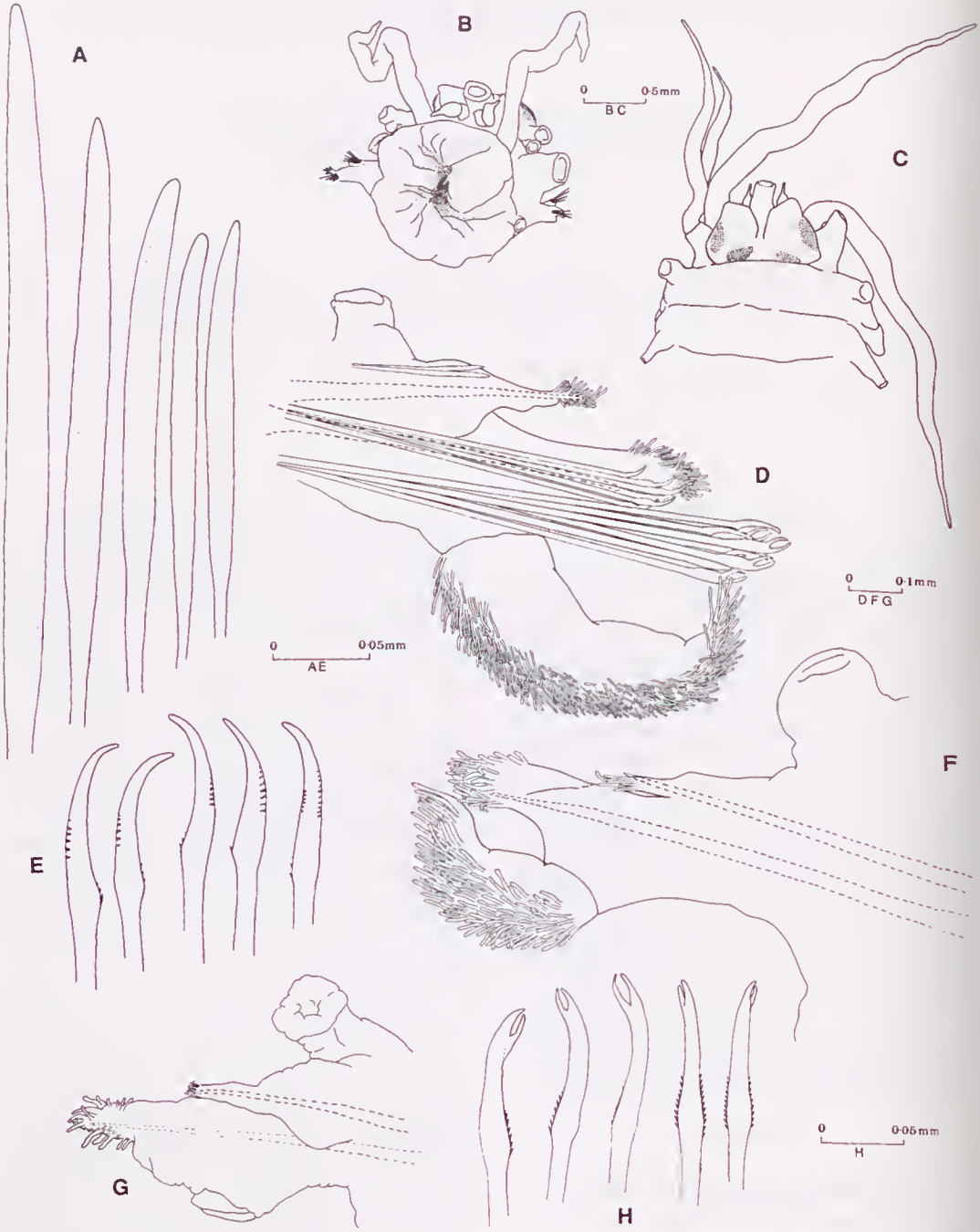

Fig.1. *Brychionoe karenae* sp. nov.. **A,C,E-H**, holotype SAM E1613; **B,D**,paratype NTM W5604: **A**, notosetae from segment 3; **B**, anterior end, ventral view, median antenna and tentacular cirri missing; **C**, anterior end, dorsal view, median antenna and right tentacular cirri missing; **D**, elytragerous parapodium from mid-body region, anterior view ; **E**, neurosetae from segment 3; **F**, cirrigerous parapodium from anterior section of body, anterior view; **G**, elytragerous parapodium from segment 4, anterior view; **H**, neurosetae from segment 3.

Etymology. The generic name is derived from the Greek *brychios*, meaning from the deep.

Brychionoe karenae sp.nov.
(Figs. 1-2)

Type material. HOLOTYPE - SAM E1613, Cascade Plateau, Tasman Sea, 44°03'S, 150° 26'E, from branches of antipatharian *Leiopathes* n. sp., 1100m, 16.ii.1990, coll. K.Gowlett-Holmes. PARATYPES - SAM E1614-1626, 13 specimens; NTM W5602, W5603, W5604, 3 specimens; AM W20596-20571, 3 specimens; BMNH ZB 1991-1, ZB 1991-2, 2 specimens; USNM.139305-7, 3 specimens.

Additional material. SAM E1627, Same collection data as type material, 3 specimens.

Description. Holotype. Body elongate, slender, fragile, tapering gradually posteriorly. Length 55mm, width including parapodia 4mm; 106 segments. Body with broad dark stripe of pigment dorsally, pharynx darkly pigmented. Prostomium, antennae and tentacular cirri with reddish brown pigment. Ventral surface without pigment.

Elytra 87 pairs on segments 2,4,5,7, alternate segments to 23,26,29,32,33,35, and then on every segment to end of body. Elytra (Fig. 2A-D) soft, thick, streaked with reddish-brown pigment; with numerous micropapillae scattered on surface (Fig. 2D), lateral margin close to elytrophore scar with fringe of papillae (Fig. 2C), anterior surface with dense band of blunt, peglike microtubercles, some with small points (Fig. 2B).

Dorsal cirri with cirrophores large, cylindrical (Fig. 1E); styles stout, long, tapering, profusely papillated. Dorsal tubercles not present.

Prostomium bilobed, wider than long, with slight cephalic peaks (Fig. 1B,C). Eyes two pairs, poorly defined, anterior pair large, lying laterally in front of widest part of prostomium, posterior pair smaller, near rear edge.

Palps long, slender, appearing smooth at 40x magnification. Median antenna with ceratophore large, cylindrical, inserted in anterior notch; style missing.

Lateral antennae with distinct ceratophores, inserted ventrally on prostomium (Fig. 1B: Paratype NTM W5604); styles very short, minutely papillated.

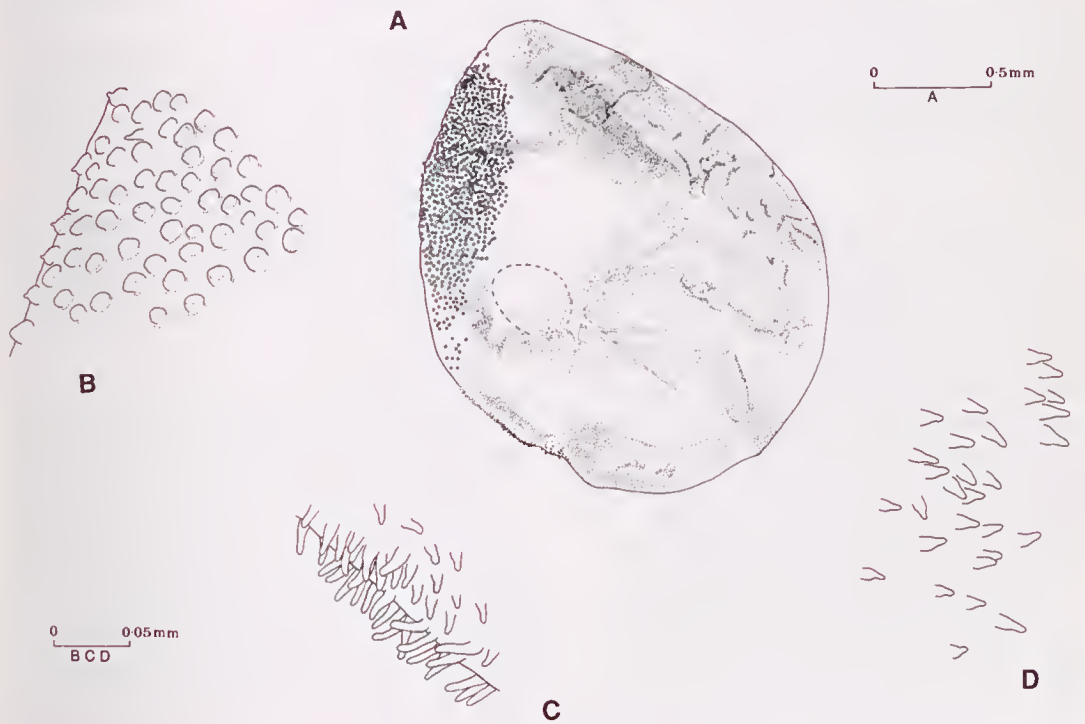

Fig.2. *Brychionoe karenae* sp. nov.. Elytron from holotype SAM E1613: **A**, entire elytron, dorsal view; **B**, enlargement of microtubercles; **C**, enlargement of fringe papillae; **D**, enlargement of surface papillae.

Table 1. Comparison of major characters between genera of Harmothoinae with long bodies and numerous pairs of elytra (Complied from Pettibone 1969; Hanley and Burke 1988).

GENUS	PAIRS OF ELYTRA	ELYTRA ATTACHED TO SEGMENT NO.	NOTOSETAE	NEUROSETAE	OTHER
Brychionoe gen. nov.	Numerous	2,4,5,7, alternate segments to 23,26,29,32,33,35, then on every segment to end of body.	stouter than neurosetae, very slightly curved flattened, smooth.	anterior ones unidentate, hooked, with few rows of serrations including rows of serrations on convex edge of hooked tips. Posteriorly setae strongly bifid with more rows of serrations.	elytra large, thick, commensal on antipatharian. Deep water, Tasman Sea.
Hololepidella Pettibone, 1969	up to 26 or more	2,4,5,7, alternate segments to 23,26,29,31,34, alternate segments to end of body; sometimes irregular on posterior segments.	stouter than neurosetae, nearly smooth, a few widely separated spines	with spinous regions, tips entire or bidentate.	elytra large, commensal with echinoderms, Indo-West Pacific.
Neohololepidella Pettibone, 1969	up to 50 or more	2,4,5,7, alternate segments to 23,26,29,32,34, alternate segments to end of body.	numerous, thicker than neurosetae, nearly smooth tapering to blunt tips.	numerous, with numerous spinous rows, slightly bifid and entire.	elytra size? associated with calcareous sponge, Central Indian Ocean.
Paraholelepidella Pettibone, 1969	numerous	2,4,5,7, alternate segments to 23,26,29,32,33,35, alternate segments to end of body; some irregularity posteriorly.	thinner than neurosetae, short, stout, tapering to blunt tips.	stout, with faint spinous regions and slightly hooked, entire tips.	elytra small, found in tubes composed of sand grains, tropical Atlantic.
Polyeunoa Pettibone, 1969	at least 15	2,4,5,7, alternate segments to 23,26,29,32, with or without some additional elytra, sporadically arranged, 1-14 extra pairs may be present, sometimes asymmetrical.	same thickness or thicker than neurosetae, short to long, smooth or lightly serrated, tapering to blunt tips.	stout, with enlarged spinous regions and bare, nearly straight tips which are sometimes notched.	anterior elytra large, posterior elytra small when present, from alcyonarians and gorgonians, deep water, Southern Ocean.

Tentacular segment not visible dorsally, tentaculophores lateral to prostomium, asetigerous, with two pairs of tentacular cirri, styles long, slender, minutely papillated, tapering gently to fine tip; facial tubercle absent. Segment 2 with first pair of elytrophores, biramous parapodia, and ventral buccal cirri longer than following ventral cirri; without nuchal fold.

Parapodia biramous (Fig. 1D,F,G), on anterior few segments, subbiramous posteriorly. Notopodia of anterior few segments large, conical, with digitiform acicular lobe; notopodia of rest of body segments much smaller, digitiform. Distal ends of all notopodia with long slender papillae (Fig. 1D,F,G). Neuropodium with longer, bluntly rounded, presetal acicular lobe and shorter, bluntly triangular, postsetal lobe. Both lobes profusely papillated distally. Ventral cirri very large, thick, with abundant long papillae on ventral surface (Fig. 1D,F). Nephridial papillae not visible.

Notosetae slightly stouter than neurosetae, long, smooth, flattened, with bluntly rounded tips (Fig. 1A,D). Neurosetae of anterior neuropodia long, slender, hooked distally, with several rows of serrations, including several rows of very fine serrations on outer part of shaft, below unidentate tips (Fig. 1E,D). Neurosetae of following neuropodia slightly hooked, with more numerous serrations below strongly bifid tips (Fig. 1D,H).

Paratypes. Twenty-four specimens, nine complete, ranging in length from 16.5mm to 38mm, with 65-93 segments, with 47-75 pairs of elytra, and with the same elytral attachment pattern as the holotype.

All the paratypes closely resemble the holotype in respect of setal characteristics, parapodial and prostomial morphology, and colouration.

Habitat. Commensal on an new species of antipatharian (*Leiopathes* n. sp.), collected from 1100m depth.

Distribution. Known only from the type locality, Cascade Plateau, Tasman Sea.

Etymology. The species is named for Karen Gowlett-Holmes, the collector of the material.

Remarks. Hanley (1989) erected the subfamily Aretonoinae for a number of genera that had previously been included in the Harmothoinae or Lepidonotinae. Several of these genera are long-bodied with numerous pairs of elytra, including *Hololepidella*, *Neohololepidella* and *Paraholelepidella*. The original referral of *Hololepidella* and related genera to the Aretonoinae was based in part on the premise that the first or tentacular segment in these genera was asetigerous. However, recent

examination of many specimens of a number of species of *Hololepidella* suggest that it should remain in the Harmothoinae, primarily because of the presence of setae on the tentacular segment. Therefore we have included *Hololepidella* and the two related genera *Neohololepidella* and *Parahololepidella* in the Harmothoinae.

The 4 genera in the Harmothoinae which are long-bodied with numerous pairs of elytra are compared in Table 1. Comparisons between diagnostic features of these 4 genera and *Brychionoe* show that elytron attachment pattern, and setal characteristics are unique to the new genus.

All 18 specimens of *Brychionoe karenae* were collected from a single antipatharian colony where they were found tightly coiled around the branches. All the elytra were detached but had not been lost because each specimen was enveloped by a thick layer of mucus. Presumably the mucus had been secreted by the scaleworms.

ACKNOWLEDGEMENTS

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